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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,195	02/27/2006	Carmit Levita	C&R - 103	1351

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EXAMINER	
MACFARLANE, STACEY NEE	
ART UNIT	**PAPER NUMBER**
1649	
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10/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,195	LEVITA ET AL.	
	Examiner	Art Unit	
	Stacey MacFarlane	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *46-66* is/are pending in the application.

4a) Of the above claim(s) *47-64 and 66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *46 and 65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/20/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in the reply filed on September 24, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 47-64 and 66 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

3. Claims 45 and 65, in so far as they are drawn to a composition of matter comprising an isolated polypeptide that does not comprise the amino acid sequence recited in SEQ ID NO: 10, wherein said isolated polypeptide is an amino acid sequence comprising that recited in SEQ ID NO: 2, will be examined in the instant Office Action.

Claim Objections

4. Claim 46 is objected to for reciting non-elected subject matter. Claim 46 is an improper Markush Group. MPEP 803.02 states:

> "Since the decisions in *In re Weber*, 580 F.2d 455, 198 USPQ 328 (CCPA 1978) and In re Haas, 580 F.2d 461, 198 USPQ 334 (CCPA 1978), it is improper for the Office to refuse to examine that which applicants regard as their invention, unless the subject matter in a claim lacks unity of invention. *In re Harnish*, 631 F.2d 716, 206 USPQ 300 (CCPA 1980); and *Ex parte Hozumi*, 3 USPQ2d 1059 (Bd. Pat. App. & Int. 1984).
>
> Broadly, unity of invention exists where compounds included within a Markush group (1) share a common utility, and (2) share a substantial structural feature disclosed as being essential to that utility."

Applicant is advised that claim 46 is an improper Markush claim because the plurality of amino acid, nucleic acid sequences, antibodies, transgenic animals, ligands, kits, vaccines etc. recited in this claim lack a structural relationship and a common utility, based upon a shared structural feature lacking from the prior art. Each of these products are distinct compositions of matter lacking either a common structural property which distinguishes them as a group from structurally related compounds of the prior art, or which provides them with a common utility which is lacking from those prior art compositions. Appropriate action is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 46 and 65 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The pending claims have been reviewed in light of the Utility Examination Guidelines 60 FR 36263 (1995) and at 1177 O.G. 146 (1995) and the Revised Utility Guidelines, Vol. 64, Number 244, December 21, 1999.

The Examiner is using the following definitions in evaluating the claims for utility.

"Specific"-A utility that is *specific* to the subject matter claimed. This contrasts with a *general* utility that would be applicable to the broad class of the invention.

"Substantial"-A utility that defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities.

"Well-established"-a specific, substantial and credible utility which is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material alone or taken with the knowledge of one skilled in the art.

The claims are directed to a composition of matter comprising an isolated polypeptide that does not comprise the amino acid sequence recited in SEQ ID NO: 10, but comprises an amino acid sequence of that recited in SEQ ID NO: 2.

On pages 5-6, the specification states that the invention is based on the discovery that the claimed protein is a splice variant of the midkine family of proteins. The specification goes on to assert the utility that the protein of the present invention "may modulate (e.g. antagonize) swall/P21741/MK_HUMAN and that this ability may be due to the extended C-terminal tail of INSP0106" (page 7, lines 28-30). "Modulation" is a very generalized utility and in the instant case, there is no specific disclosure that the polypeptide of the claims indeed modulates any protein. The specification variously teaches other asserted utilities for the polypeptide of the claims such as a tool for the identification of ligands (pages 33-36) or the production of antibodies (pages 18-20). None of the teachings with regard to the asserted utilities are specific to the claimed invention. Instead, they are generic recitations of what essentially any protein may be used for, thus the asserted utilities are not specific.

Furthermore, even if a specific utility were among those set forth in the specification, the identification and reasonable confirmation of a "real world" context of use for the isolated polypeptide would require further experimentation. The specification teaches that "further experiments may now be performed ...[to] enable the continued investigation of the functional characteristics of the INSP106 polypeptides"

(paragraph bridging pages 61-62), thus indicating that the functions of this polypeptide have yet to be characterized. Likewise, the disclosure states that "the identification of the function of the INSP106 allows for the design of screening methods ....ligands and compounds" (page 10 lines 20-24). The asserted function of the polypeptide is hypothetical and based upon a bioinformatics approach that identified the INSP106 polypeptide as a splice variant of the midkine gene family (specification, pages 2 and 51). The art generally acknowledges that function cannot be predicted based on structural similarity to a protein in the sequence databases (for review see, Skolnick et al. Trends Biotechnol. 18: 34-39, published 2000). Furthermore, the disclosure teaches that the sequence variation of the invented splice variant occurs within the C terminal tail of polypeptide, and bases an asserted utility for this variation upon data that demonstrates the removal of a C-terminal tail of a pleiotrophin prevents binding to the receptor (Specification, page 6). Since there is no specific utility for the claimed polypeptide, any asserted utility for the variation within the C-terminal tail is purely speculative. Furthermore, the asserted utility that polypeptide of the claims as a tool for use in basic research, such as studying the functional or binding properties of said protein, does not define a substantial or "real-world" utility.

Therefore, the claimed subject matter is not supported by either a specific or substantial asserted utility because the disclosed utilities are generally applicable to a broad class of molecules and by requiring or further research to identify or reasonably confirm a "real world" context of use, the specification fails to set forth the unique

properties of the claimed invention such that the skilled artisan would recognize a specific real-world utility therefore.

7. Claims 46 and 65 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 46 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 46 recites "fragments", "functional equivalents" and "antigenic determinants" of the instantly-elected SEQ ID NO: 2. Furthermore, the polypeptide of the invention is claimed as comprising SEQ ID NO: 2 but not SEQ ID NO: 10, without describing the specific variant sequences that replace SEQ ID NO: 10, the claims do not adequately describe the variant of the claims. The claim does not require that these fragments, functional equivalents, antigenic determinants or variants possess any

particular conserved structure or other disclosed distinguishing feature. Likewise the variants do not possess any particular conserved structure, they merely comprise SEQ ID NO: 2, which is known in the art, but do not comprise SEQ ID NO: 10. Thus the claims are drawn to a genus of undefined molecules and the instant specification fails to describe the entire genus of molecules that are encompassed by these claims.

In making a determination of whether the application complies with the written description requirement of 35 U.S.C. 112, first paragraph, it is necessary to understand what Applicant has possession of and what Applicant is claiming. From the specification, it is clear that Applicant claims possession of a splice variant of a known midkine family member (swall/P21741/MK_HUMAN) (page 1). The claims, however, are open-ended and are drawn to a genus of fragments, functional equivalents and antigenic determinants of protein variants, which are not limited to specific structure.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In the instant case, there is not even identification of any particular portion of the structure that is to be conserved among the claimed fragments or functional equivalents. As stated above, it is not even clear what molecules are fragments or functional equivalents, as the specification does not provide a structure these fragments or functional equivalents and, thus, fails to provide a representative

number of species for the recited genus. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, the court clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed structure of variants that comprise SEQ ID NO: 2 but not SEQ ID NO: 10, nor can a skilled artisan envision the fragments, functional equivalents, or antigenic determinants of said variants. Therefore, conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of identifying activity. Adequate written description requires more than a mere recitation of activity as part of the invention and a reference to a potential method of isolating or screening. The compound itself is required. See *Fiers v Revel*, 25 USPQ2d 1601 at 1601 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification only provided for the bovine sequence.

Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 U.S.C. § 112 is severable from its enablement provision (see page 1115).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 46 and 65 are rejected under 35 U.S.C. 102(e) as being anticipated by PCT/US2002/029636, filed September 18, 2002, designating the United States and published in English as WO/2003/025142.

Claims 46 and 65 are drawn to a composition of matter comprising an isolated polypeptide that does not comprise the amino acid sequence recited in SEQ ID NO: 10, wherein said polypeptide is an amino acid sequence comprising that recited in SEQ ID NO: 2.

PCT/US2002/029636 describes an isolated polypeptide specifically comprising an amino acid sequence that is 97.8% identical to SEQ ID NO: 2 and specifically excludes the amino acid sequence of SEQ ID NO: 10 of the instant claims. The alignment is as follows:

Query Match 97.8%; Score 398; DB 7; Length 162;

Best Local Similarity 100.0%; Pred. No. 6.7e-39;
Matches 72; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 DCKYKFENWGACDGGTGTKVRQGTLKKARYNAQCQETIRVTKPCTPKTKAKAKGQRKEKG 60

Db 83 DCKYKFENWGACDGGTGTKVRQGTLKKARYNAQCQETIRVTKPCTPKTKAKAKGQRKEKG 142

Qy 61 VGLSRGAAPPPP 72

Db 143 VGLSRGAAPPPP 154

Therefore, the isolated polypeptide of PCT/US2002/029636 anticipates the composition of matter of the instant claims.

Conclusion

12. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacey MacFarlane whose telephone number is (571) 270-3057. The examiner can normally be reached on M,W and ALT. F 6 am to 3 pm, T & R 5:30 am - 4 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stacey MacFarlane
Examiner
Art Unit 1649

/SNM/

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PRIMARY EXAMINER